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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/706,826	11/12/2003	Frederik Bijkerk	FMW-GG-CIP	6924

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EXAMINER

BLACKWELL, GWENDOLYN A

ART UNIT	PAPER NUMBER
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1775

DATE MAILED: 03/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/706,826

Applicant(s)

BIJKERK ET AL.

Examiner

Gwendolyn Blackwell

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 November 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 and 29-33 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 29-33 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☒ Certified copies of the priority documents have been received in Application No. 09/821,448.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 11/03.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election of Group I in the reply filed on November 21, 2006 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 1-2 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for the protective layers set forth on page 8, lines 10-14, does not reasonably provide enablement for any and every substance that forms a mixture, alloy or a compound with iridium or silicon nitride. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make the invention commensurate in scope with these claims.

While every known embodiment need not be present as an example in the specification, Applicant has not provided guidance as to what constitutes "any further substance". Any "further substance, which can form not only a mixture but also an alloy or a compound with the iridium" or silicon nitride (specification, page 8, lines 10-24) would encompass all known and yet to be known inorganic and organic materials so long as materials can be mixed with iridium

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or silicon nitride. The breath of the phrase "any further substance" is outside of the scope of the invention for which Applicant is seeking protection.

Claim Rejections - 35 USC § 102/103

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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7. Claims 4 and 29-33 are rejected under 35 U.S.C. 102(b) as being anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over United States Patent no. 5,310,603, Fukuda et al.

Regarding claims 4, 29, 31, and 33

Fukuda et al disclose a multilayer reflection mirror for soft x-ray to vacuum ultraviolet rays, which encompasses the extreme ultraviolet range. The multilayered coating is formed on a substrate and is comprised of alternating layers of tantalum nitride and silicon carbide, (column 10, claim 9), as well as hafnium boride and silicon nitride, (column 10, claim 5). As the layers are deposited through electron beam vapor deposition there will be mixing at the interfaces of the materials resulting in a tantalum nitride/silicon carbide interface having carbon and SiC present in addition to the hafnium boride/silicon nitride interface having silicon nitride present, meeting the limitations of claims 4, 29, 31, and 33.

Regarding claims 30 and 32

Materials such as molybdenum carbide and silicon carbide can be used as the alternating materials in the multilayer coating, (column 7, lines 15-38). As the layers are deposited through electron beam vapor deposition there will be mixing at the interfaces of the materials resulting in a molybdenum carbide/silicon carbide interface having Mo₂C and SiC present, meeting the limitations of claims 30 and 32.

In the alternative it would be obvious to one skilled in the art at the time of invention to create the multilayer structure from Mo₂C and SiC through routine experimentation as Fukuda et al specifically teaches that the low refractive /high melting point material may be a carbide of a transition metal such as Mo and the high refractive/high melting point material may be a carbide

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of silicon which can provide a high reflection factor through the optimization of certain factors as set forth in column 7, lines 39-65).

Claim Rejections - 35 USC § 102

8. Claims 1-3 are rejected under 35 U.S.C. 102(b) as being anticipated by United States Patent Application Publication no. 2002/0084425, Klebanoff et al.

Regarding claims 1-3

Klebanoff et al disclose a self cleaning optic for extreme ultraviolet lithography wherein the optic is comprised of a Mo/Si multilayered structure with a capping layer of Ru, Rh, Pd, Ir, Pt, Au, and combinations thereof formed on the surface of the multilayered structure, (page 2, sections 0011-0012), meeting the limitations of claims 1-3.

9. Claims 1-3 are rejected under 35 U.S.C. 102(e) as being anticipated by United States Patent no. 6,759,141, Prisbrey.

Regarding claims 1-3

Prisbrey discloses an oxidation preventative capping layer for multilayer reflective coatings used in extreme ultraviolet lithography applications, (column 1, lines 13-15). The capping layer is comprised of iridium or an iridium compound and the multilayer reflective coating is comprised of alternating layers of molybdenum and silicon, (columns 2-3, lines 41), meeting the limitations of claims 1-3.

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Conclusion


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gwendolyn Blackwell whose telephone number is (571) 272-1533. The examiner can normally be reached on Monday - Thursday; 6:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer McNeil can be reached on (571) 272-1540. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Gwendolyn Blackwell
Examiner
Art Unit 1775

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JENNIFER MCNEIL
PRIMARY EXAMINER
3/16/06